

Patent Claims

1. Stent, comprising a biodegradable SMP material for use in the non-vascular or vascular field.
2. Stent as claimed in claim 1, wherein the stent comprises a basic structure of a biodegradable plastic material or a degradable material coated by SMP material.
3. Stent as claimed in claim 2, wherein the degradable metal is a magnesium alloy, pure magnesium or a composite of magnesium or a magnesium alloy with biodegradable polymer.
4. Stent as claimed in one of the preceding claims, further comprising additional additives selected among x-ray contrast materials and medically effective compounds.
5. Stent as claimed in at least one of the preceding claims, wherein the SMP material is selected among polymer networks, thermoplastic SMP materials, composite materials or blends.
6. Stent as claimed in at least one of the preceding claims, wherein the SMP material is selected among SMP materials in which the SMP effect is induced thermally, is photo-induced and/or wherein the SMP material is biocompatible and/or haemocompatible and/or wherein the SMP material reveals a particle-free degradation behaviour.
7. Stent as claimed in claim 5, wherein the network includes caprolacton units and/or pentadecalacton units.
8. Stent as claimed in claim 7, wherein the network consists of cross linked caprolactonmacromonomers.

9. Stent as claimed in one of the preceding claims, wherein the stent additionally comprises a surface coating.
10. Stent as claimed in claim 9, wherein the surface coating is selected among the coatings that modify haemocompatibility.
11. Method of manufacturing a stent as claimed in one of the preceding claims, comprising the processing of the SMP material to a stent by extrusion methods, coating methods, metal casting methods or spinning and weaving methods.
12. Kit, comprising a stent as claimed in at least one of claims 1 to 10, and additionally a temperature-controlled balloon catheter and/or a balloon catheter with an optical fibre.
13. Method for the minimal invasive implantation of a stent, comprising the following steps:
 - placing a stent as claimed in one of claims 1 to 10 onto a temperature-controlled balloon catheter or a balloon catheter with an optical fibre, wherein the SMP material has two shapes in the memory and wherein this material was programmed to two shapes, wherein the first shape, compared to the second shape, is a tubular shape with a larger diameter
 - Inserting the stent placed in this manner to the desired position, wherein the SMP material exists in its second shape,
 - heating the stent by inserting a heating medium into the catheter, or introduction of light (preferably UV light) of a suitable wavelength,
 - activating the SMP effect to bring the stent into the first shape,
 - removing the balloon catheter.
14. Method for the minimal invasion implantation of a sent, comprising the following steps:
 - placing a stent according to one of claims 1 to 10 onto a temperature-controlled balloon catheter or a balloon catheter having a an optical fiber,
 - inserting the stent placed in this manner to the desired position
 - heating the stent by inserting a heating medium into the catheter or introducing light (preferably UV light) of a suitable wavelength

- activating the SMP effect to bring the stent into its permanent shape
- removing the balloon catheter.